

# Chrome free coatings for fasteners and metal components

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- Why use coatings
- Coating basics
- Magni 565
- Approvals

# Magni Coating Benefits

- Thin film
- Corrosion protection
- No hydrogen embrittlement
- No Chrome
- Consistent torque and tension
- Chemical / fluid resistant
- Appearance (colors)
- Thermal stability
- Commercial availability

## Compliance to Hazardous Substance Regulations

- ✓ Restriction of Hazardous Substances (RoHS)
- ✓ Waste Electrical and Electronic Equipment (WEEE)
  - Deadline 2006 to be compliant
- ✓ End-of-Life Vehicle (ELV)
  - By 2007, producers pay costs of treating negative ELVs at treatment facilities.
- ✓ REACH

# The Science of Corrosion Protection

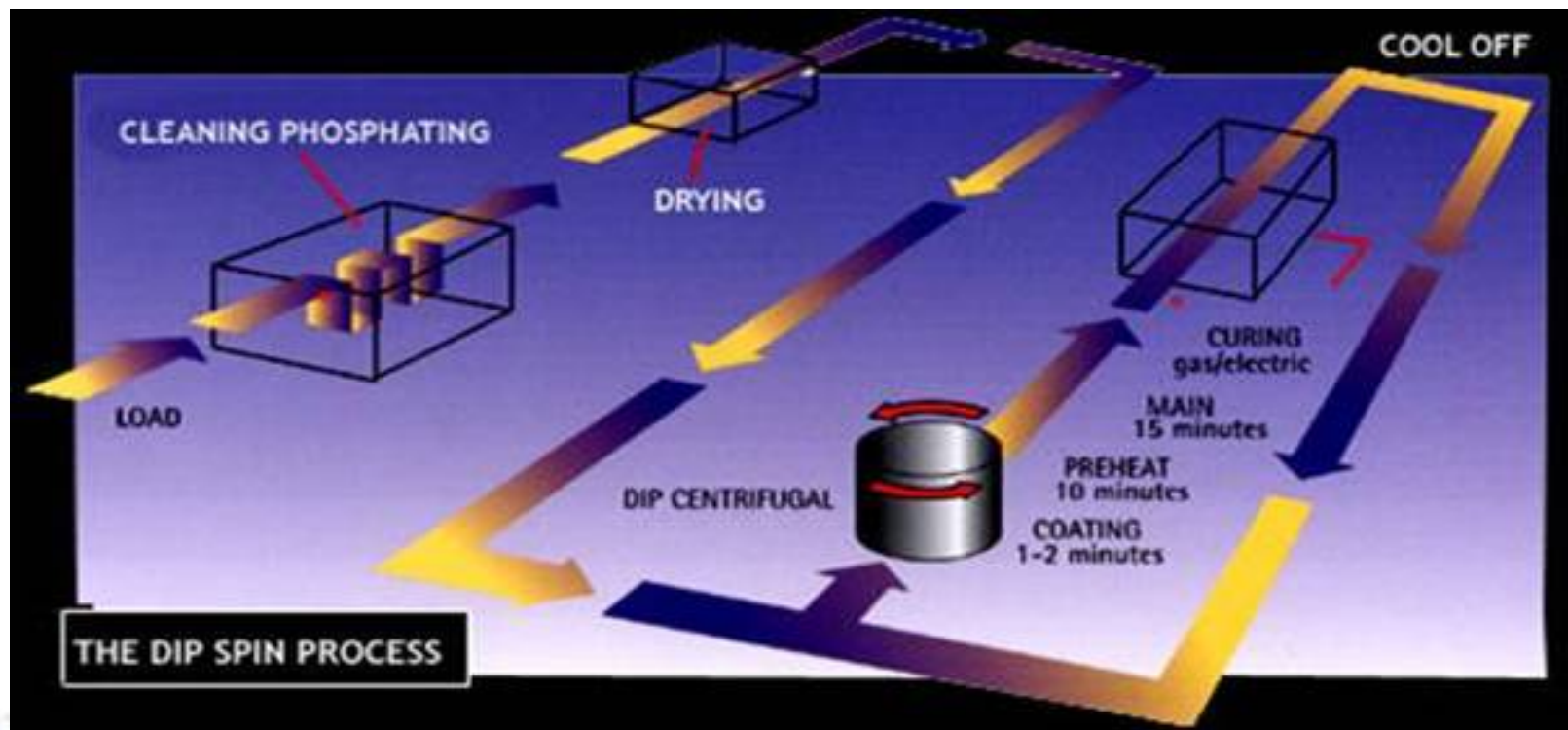


- Coatings and delay the natural oxidation reaction of steel in any environment. Every anti-corrosion process uses either a barrier layer or a sacrificial layer, or combination of these layers, to prevent the environment from reaching or reacting with steel.

- Sacrificial Coating: a self corroding layer, that is more electrolytically active than steel, and gives itself up first in a corrosive environment
- Barrier Coating: a physical prevention layer between steel and the atmosphere



# Dip spin process



## Magni 565 for use on military applications

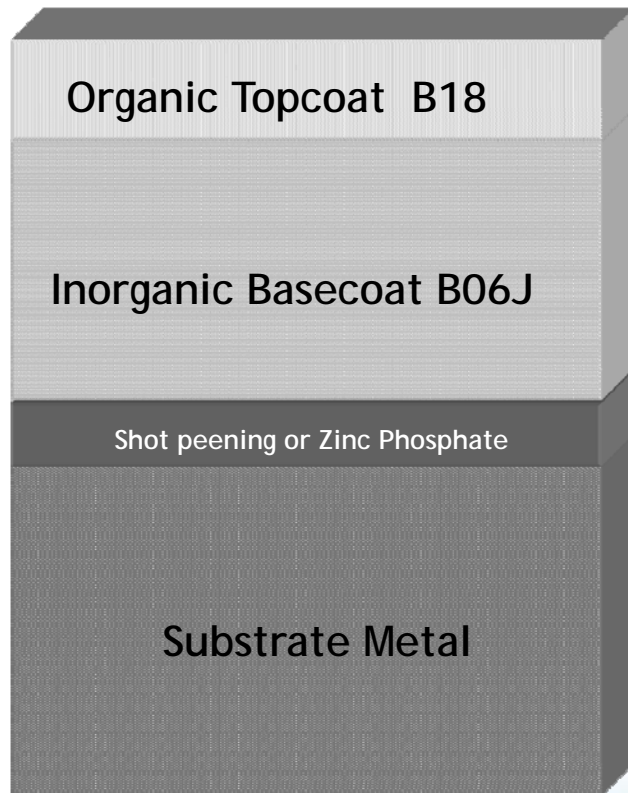
- Approved for use with TACOM drawing 12469117

### Application methods:

- Large components - Sprayed
- Small components - dip/spin



## Magni 565 - system cross section



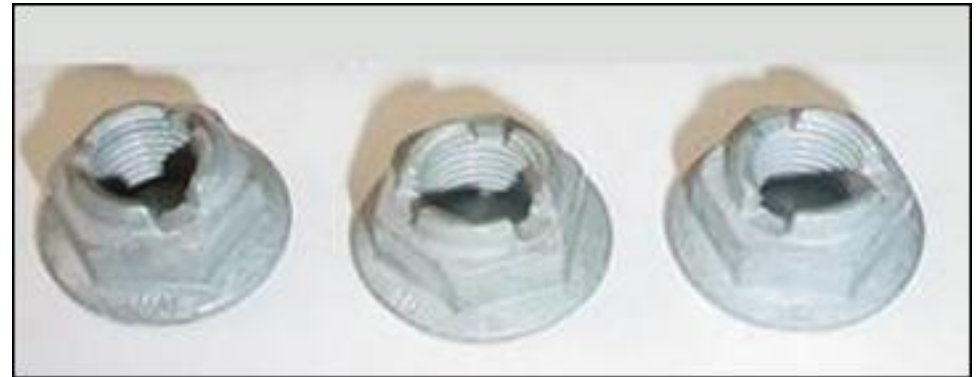
1 coat organic Topcoat typical thickness B18- 5µm

1 coat Inorganic Basecoat B06J typical thickness- 7µm

## Magni 565 Corrosion Test Results



ASTM B117 Salt Spray  
1000 hours



Humidity 1000 hours

# Cyclic testing

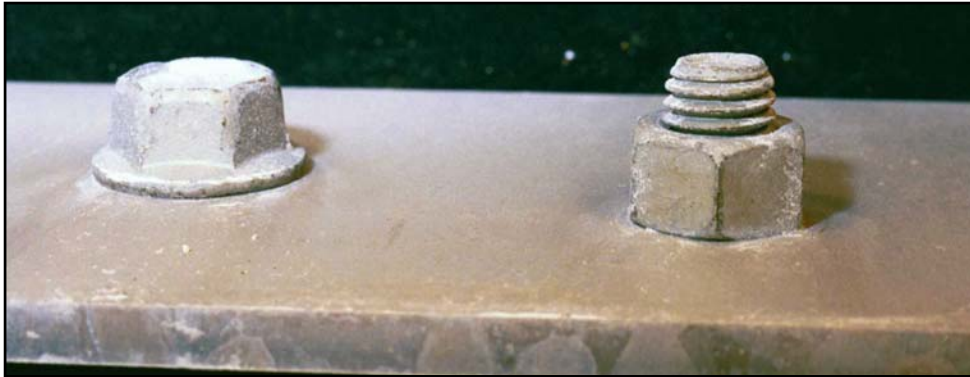


GM9540P (90 cycles – 10+ year underbody)



SAE J2334 60 cycles

## Magni 565 Galvanic Corrosion Test Results



Magni 565 fasteners fastened  
into aluminum panel  
GM9540P - 80 cycles



Magni 565 fasteners fastened  
into aluminum panel  
GM9540P - 120 cycles

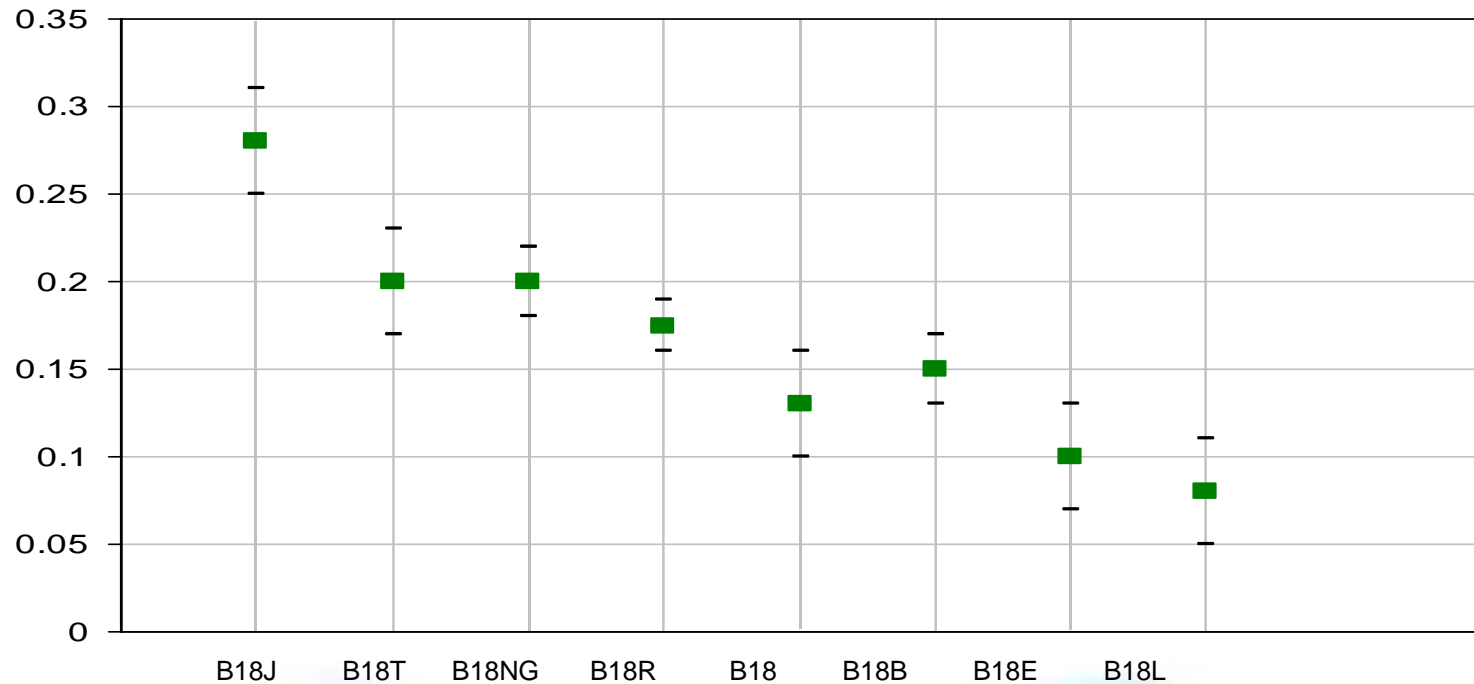




# Coefficient of Friction

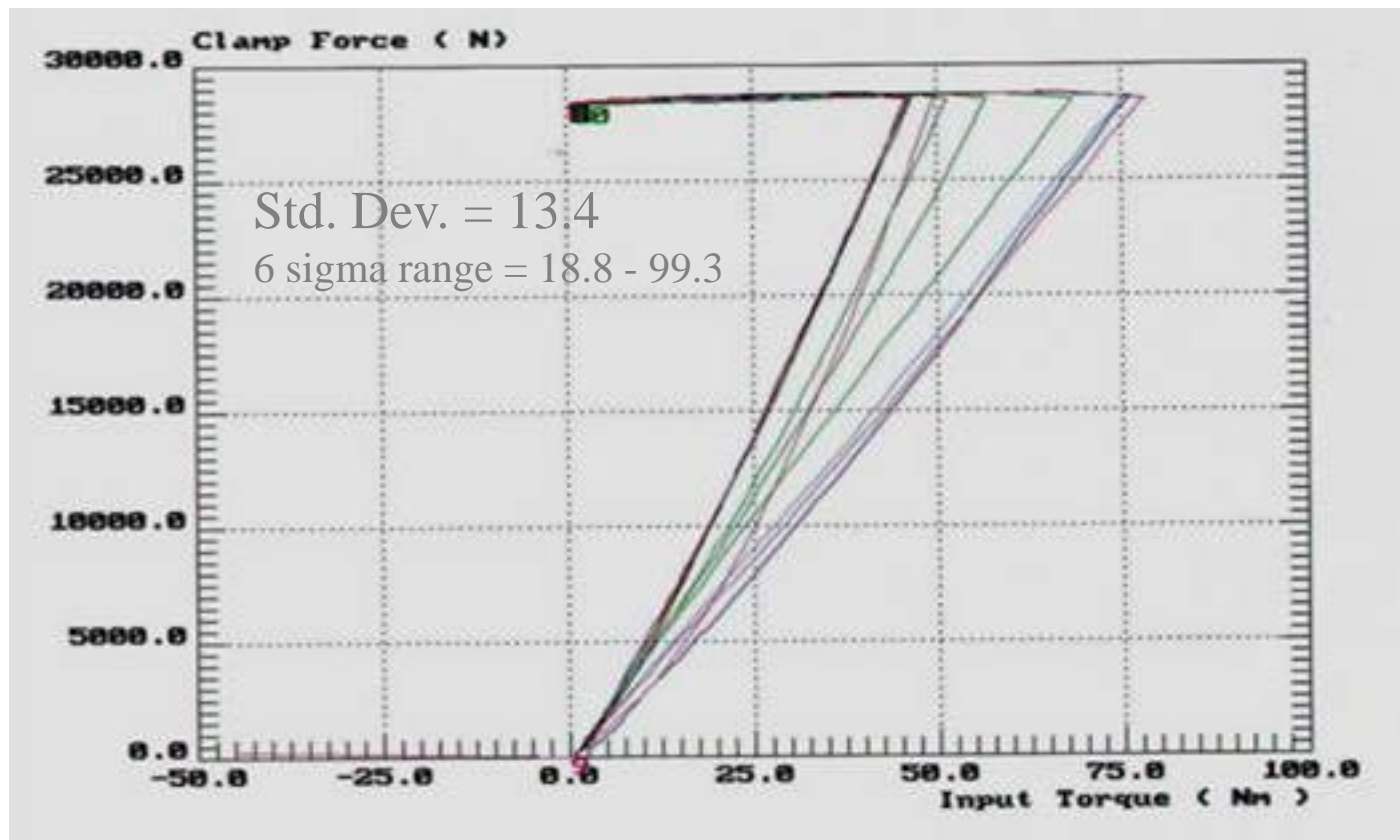
## Magni 565/567 Topcoats

B18J	0.25–0.31
B18T	0.17–0.23
B18NG	0.18–0.22
(Green)	
B18R	0.16–0.19
B18	0.10–0.16
B18B	0.13–0.17
(Blue)	
B18E	0.07–0.13
B18L	0.05–0.11



# Friction results

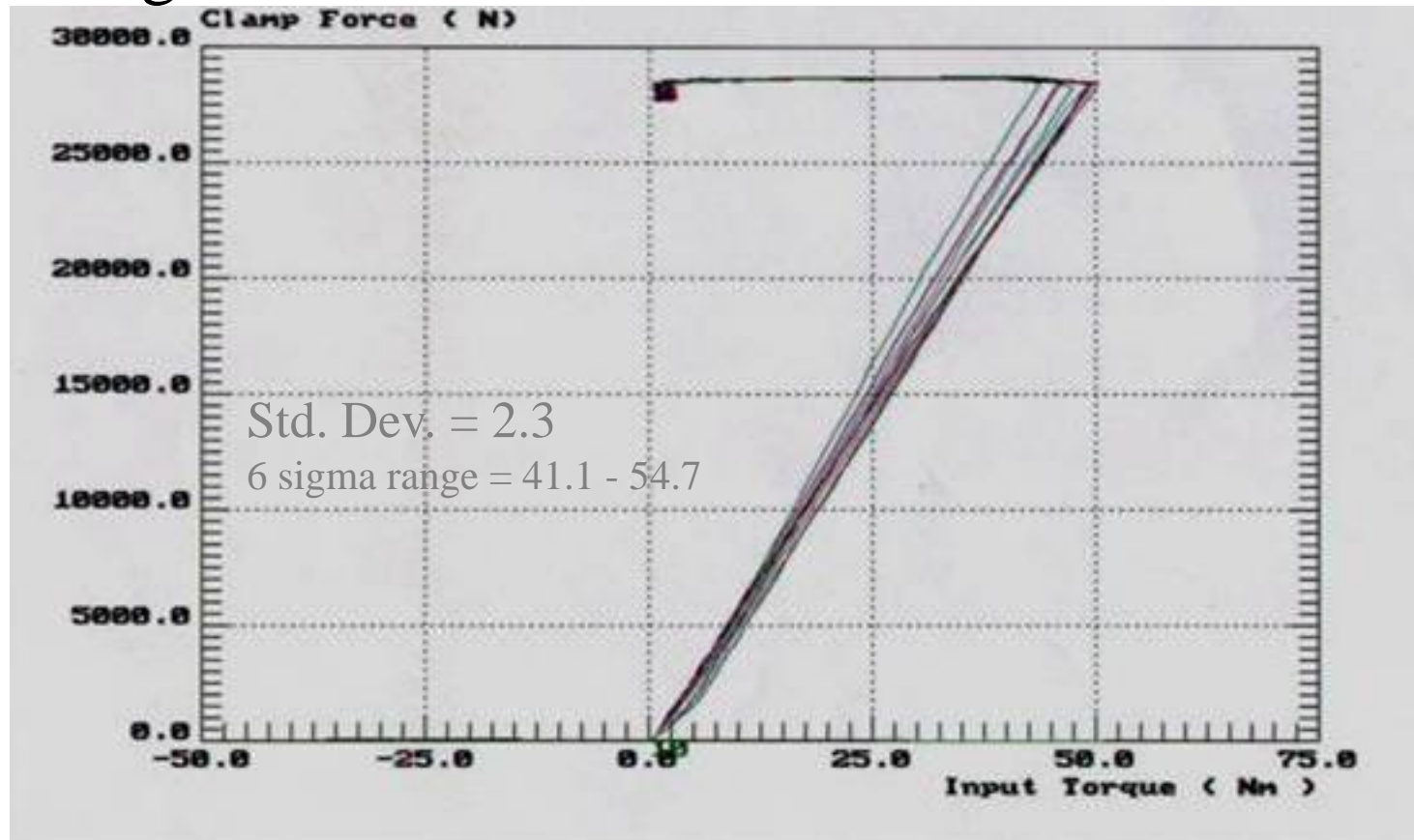
GMW3044 - Zinc Plate + Trivalent Passivation





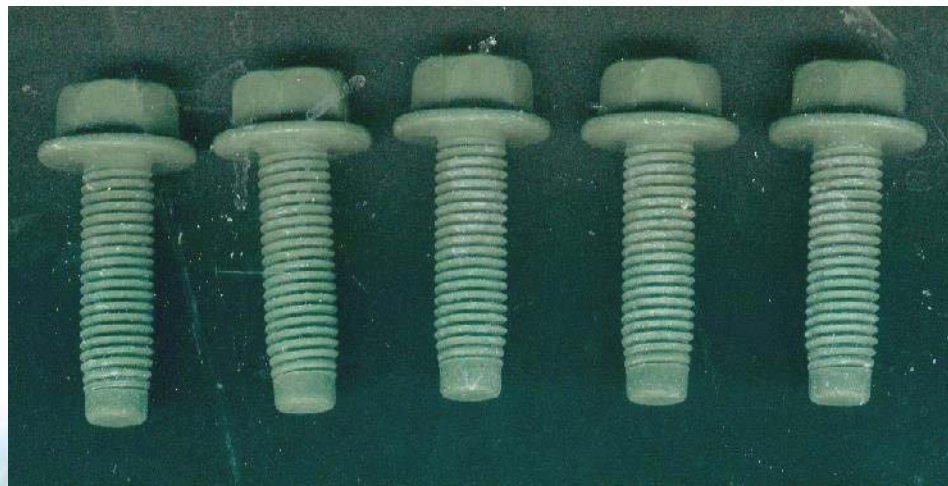
# Friction results

## Magni 565
















# Current military users

- TACOM
- AM General
- BAE
- General Dynamics Land Systems
- Textron Land and Marine
- Oskosh



## Magni 565 Automotive Specifications








Automotive Company	Specification Number
ArvinMeritor 	P91
BMW 	GS90010
Chrysler 	PS5873 (ref: PS10633 non-threaded)
Chrysler 	PS10633
Chrysler 	PS10378
Daimler-Benz 	DBL8440
Delphi 	DX551801/DX551810
Delphi 	DX45501804
Fiat 	9.57513/Tipo IV
Ford 	S439 (WSS-M21P37-A1)










Automotive Company	Specification Number
General Motors 	GM7114M
General Motors 	GMW3359
Land Rover 	LRES.21.ZS.05
Nissan 	NES M4601
Porsche 	PTL 7529
PSA 	B15 3320
Renault Truck 	01.71.4002/H
TRW 	TS 2-25-60, Class A
Volkswagen 	TL233
Volvo 	VCS5737.29,.19



THE MAGNI GROUP, INC.

## Magni Industrial Specifications

Company	Specification Number
Caterpillar 	1E1675
BAE Systems 	3000099
PACCAR 	CS0059
Briggs and Stratton 	550K
Cummins 	CES74045
Textron 	MS24667-MAG
Square D/Schneider Electric 	48057-033-00

Company	Specification Number
Arvin Meritor 	P91
Bobcat 	PS-106A
Navistar 	TMS-4518, Type 1
Case New Holland 	MAT0320 Type 1, Class A
ISO 	10683
JLG 	4150701
John Deere 	JDM F13
US Army/TACOM 	12469117
Trane 	S 3201063A1

Engineered Coatings





**THANK YOU!**

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